

228-534

2/26/2014

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

Matthew Granahan  
Nufarm Americas Inc.  
11901 S. Austin Avenue  
Alsip, IL 60803

FEB 26 2014

Subject: Notification; Per PR-Notice 98-10  
Nufarm Polaris Herbicide  
EPA Reg. No. 228-534  
Date Submitted: February 21, 2014

Dear Mr. Granahan:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 dated February 21, 2014 for the product referenced above. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10. The label submitted with the application has been stamped "Notification" and will be placed in our records.

If you have any questions regarding this letter, please contact me at (703) 306-0415 or [davis.kable@epa.gov](mailto:davis.kable@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to be "Kable Bo Davis", written over a horizontal line.

Kable Bo Davis  
Product Manager 25  
Herbicide Branch  
Registration Division (7505P)

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Please read instructions on reverse before completing form.

Form Approved. OMB No. 2070-0060

	United States <b>Environmental Protection Agency</b> Washington, DC 20460	<input type="checkbox"/> Registration <input type="checkbox"/> Amendment <input checked="" type="checkbox"/> Other	OPP Identifier Number
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**Application for Pesticide - Section I**

<b>1. Company/Product Number</b> 228-534	<b>2. EPA Product Manager</b> Bo Davis	<b>3. Proposed Classification</b> <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
<b>4. Company/Product (Name)</b> Nufam Polaris Herbicide	<b>PM#</b> 25	
<b>5. Name and Address of Applicant (Include ZIP Code)</b> Nufarm Americas Inc. 11901 S. Austin Ave. Alsip, IL 60803 <input type="checkbox"/> Check if this is a new address	<b>6. Expedited Review.</b> In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: <div style="text-align: right; font-size: 1.2em; font-weight: bold;">NOTIFICATION</div> EPA Reg. No. _____ <span style="float: right; font-size: 1.5em; font-weight: bold;">FEB 26 2014</span> Product Name _____	

**Section - II**

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

**Explanation:** Use additional page(s) if necessary. (For section I and Section II.)

Label Notification consistent and 98-10, see cover letter for detailed explanation. This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make false statements to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

**Section - III**

<b>1. Material This Product Will Be Packaged In:</b>						<b>2. Type of Container</b>	
<b>Child-Resistant Packaging</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Unit Packaging</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Water Soluble Packaging</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				<input checked="" type="checkbox"/> Metal	<input checked="" type="checkbox"/> Plastic
<b>* Certification must be submitted</b> If "Yes" Unit Packaging wgt.    No. per container		If "Yes" Package wgt.    No. per container				<input type="checkbox"/> Glass	<input type="checkbox"/> Paper
<b>3. Location of Net Contents Information</b>			<b>4. Size(s) Retail Container</b>		<b>5. Location of Label Directions</b>		
<input checked="" type="checkbox"/> Label <input checked="" type="checkbox"/> Container			1, 2.5, 5, 20, 30, 55, 220, 250 gal., Bulk		<input checked="" type="checkbox"/>		
<b>6. Manner in Which Label is Affixed to Product</b>				<input checked="" type="checkbox"/> Lithograph <input checked="" type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled			
				<input type="checkbox"/> Other _____			

**Section - IV**

<b>1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)</b>		
<b>Name</b> Matthew Granahan	<b>Title</b> Regulatory Manager	<b>Telephone No. (Include Area Code)</b> (708) 377-1421
<b>Certification</b> I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		<b>6. Date Application Received (Stamped)</b>       
<b>2. Signature</b> 	<b>3. Title</b> Regulatory Manager	
<b>4. Typed Name</b> Matthew Granahan matthew.granahan@us.nufarm.com	<b>5. Date</b> 02/21/2014	









**Private waters** - Applications may be made to private waters that are still, such as ponds, lakes and drainage ditches where there is minimal or no outflow to public waters.

**Recreational use of water in treatment area.** There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

**Livestock use of water in/from treatment area.** There are no restrictions on livestock consumption of water from the treatment area.

**Quiescent or Slow-moving Waters.** In lakes and reservoirs, DO NOT apply this product within 1 mile of an active irrigation water intake during the irrigation season. Applications less than 1 mile from an active irrigation water intake may be made during the off-season, provided that the irrigation intake will remain inactive for a minimum of 120 days after application or until residue levels of this product are determined by laboratory analysis or other appropriate means of analysis to be 1.0 ppb or less.

**PRODUCT INFORMATION**

This product is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control undesirable vegetation growing within specified aquatic, pasture/rangeland, industrial noncropland sites, and railroad, utility, and highway rights-of-way, and fence rows. Aquatic sites consist of standing and flowing water, estuarine/marine, wetland, and riparian areas. Industrial noncropland sites include utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, and nonirrigation ditchbanks. This product may also be used for the establishment and maintenance of wildlife openings, for the release of unimproved Bermudagrass and Bahiagrass, for bareground weed control, for use under certain paved surfaces and other locations specified on this label.

**Herbicidal Activity:** This product will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. This product is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two or more weeks after application. Complete kill of plants may not occur for several weeks. Applications of this product are rainfast one hour after treatment.

**This product does not control plants which are completely submerged or have a majority of their foliage under water.**

**Application Methods:** This product may be applied to the emergent foliage of the target vegetation and has little to no activity on submerged aquatic vegetation. Product concentrations resulting from direct application to water are not expected to be of sufficient concentration or duration to provide control of target vegetation. Application should be made in such a way as to maximize spray interception by the target vegetation while minimizing the amount of overspray that enters the water. For maximum activity, weeds should be growing vigorously at the time of application and the spray solution should include a surfactant (See ADJUVANTS section for specific recommendations). This product may be selectively applied by using low-volume directed application techniques or may be broadcast-applied by using ground equipment, watercraft or aircraft (aerial applications to aquatic sites must be made by helicopter). In addition, this product may also be used for cut stump, cut stem and frill and girdle treatments within aquatic sites (see AERIAL APPLICATIONS and GROUND APPLICATIONS sections for additional details).

This product must be applied with surface or helicopter application equipment in a minimum of 5 gallons of water per acre. When applying by helicopter, follow directions under the AERIAL APPLICATIONS section of this label, otherwise refer to section on GROUND APPLICATIONS when using surface equipment.

Applications made to moving bodies of water should be made while traveling upstream to prevent concentration of this herbicide in water. DO NOT apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When application is to be made to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. DO NOT treat more than one half of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

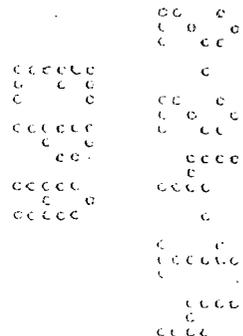
Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash for one hour after application.

Apply this product at 2 to 6 pints per acre depending on species present and weed density. DO NOT exceed the maximum label rate of 1.5 pounds acid equivalent Imazapyr (equivalent to 6 pints) per acre per year. Use the higher labeled rates for heavy weed pressure. Consult the AQUATIC WEEDS CONTROLLED section and the ADDITIONAL WEEDS CONTROLLED section of this label for specific rates.

This product may be applied as a draw down treatment in areas described above. Apply this product to weeds after water has been drained and allow 14 days before reintroduction of water.

**Terrestrial Use Sites:** This product is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to grass pasture and rangeland and noncropland areas such as railroad, utility, pipeline and highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, non-irrigation ditchbanks, including grazed or hayed areas within these sites. This product is used for the establishment and maintenance of wildlife openings. This product may also be used for the release of unimproved Bermudagrass (see specific directions) and for use under certain paved surfaces (see specific directions).

**Application Methods:** This product will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species and this product will provide residual control of labeled weeds which germinate in the treated areas. This product



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may be applied either preemergence or post-emergence to the weeds; however, post-emergence application is the method of choice in most situations, particularly for perennial species. For maximum activity, weeds should be growing vigorously at the time of post-emergence application and the spray solution should include a surfactant (See Adjuvant Section for specific recommendations). These solutions may be applied selectively by using low-volume techniques or may be applied broadcast by using ground equipment or aerial equipment. In addition, this product may also be used for stump and cut stem treatments (see specific directions).

**PRECAUTIONS FOR AVOIDING INJURY TO NON-TARGET PLANTS**

Untreated desirable plants can be affected by root uptake of this product from treated soil. Injury or loss of desirable plants may result if this product is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making applications along shorelines where desirable plants may be present, caution should be exercised to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots that extend into the water in an area where this product has been applied generally will not be adversely affected by uptake of the herbicide from the water.

**RESTRICTION:** If treated vegetation is to be removed from the application site, DO NOT use the vegetative matter as mulch or compost on or around desirable species.

Untreated trees can occasionally be affected by root uptake of this product through movement into the top soil. Injury or loss of desirable trees or other plants may result if this product is applied on or near desirable trees or other plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots.

**MANAGING OFF-TARGET MOVEMENT**

The following information is provided as general guidance for managing off-target movement. Specific use for this product may differ depending on the application technique used and the vegetation management objective.

**Spray Drift:** Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator and the entity authorizing spraying are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications: 1) The distance of the outer most operating nozzles must not exceed 3/4 the length of the rotor. 2) Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they must be observed.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or non-target crops) is minimal. DO NOT apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

To minimize spray drift, the applicator should be familiar with and take into account the following drift reduction advisory information. Additional information may be available from state enforcement agencies or the Cooperative Extension on the application of this product.

The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see WIND, TEMPERATURE AND HUMIDITY, and TEMPERATURE INVERSIONS).

**CONTROLLING DROPLET SIZE**

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - DO NOT exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. DO NOT use nozzles producing a mist droplet spray.

**APPLICATION HEIGHT**

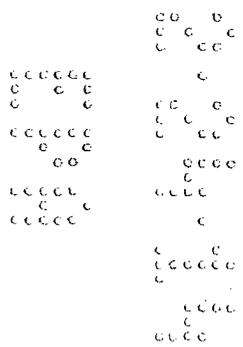
Making applications at the lowest possible height (helicopter, ground driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind.

**SWATH ADJUSTMENT**

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the treatment area, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

**WIND**

Drift potential is lowest between wind speeds of 3-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high



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inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

**TEMPERATURE AND HUMIDITY**

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

**TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, which can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

**WIND EROSION**

Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

**ADJUVANTS**

Post-emergence applications of this product require the addition of a spray adjuvant for optimum herbicide performance. Only spray adjuvants that are approved or appropriate for aquatic use can be utilized. The addition of a Chemical Producers and Distributors Associations (CPDA) certified adjuvant can increase control. A CPDA certified drift control agent may also be used.

**Nonionic Surfactants:** Use a nonionic surfactant at the rate 0.25% v/v or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with a HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 70% surfactant in the formulated product (alcohols, fatty acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

**Methylated Seed Oils or Vegetable Oil Concentrates:** Instead of a surfactant, a methylated seed oil or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable based seed oil concentrates should be mixed at a rate of 1 % of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in product deposition and uptake by plants under moisture or temperature stress.

**Silicone Based Surfactants:** See manufacturer's label for specific rate recommendations. Silicone-based surfactants may reduce the surface tension of the spray droplet, allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

**Invert emulsions:** This product can be applied as an invert emulsion. The spray solution results in an invert (water-in-oil) spray emulsion designed to minimize spray drift and spray run-off, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions.

**Fertilizer/Surfactant Blends:** Nitrogen based liquid fertilizers such as 28%N, 32%N, 10-34-0 or ammonium sulfate, may be added at the rate of 2 to 3 pints per acre in combination with the recommended rate of nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate. The use of fertilizers in a tank mix without a nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate is not recommended.

**Other:** An antifoaming agent, spray pattern indicator or drift reducing agent may be applied at the product labeled rate if necessary or desired.

**TANK MIXES**

This product may be tank-mixed with other herbicides provided that the label for the tank mix product does not prohibit such mixing. Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank-mixes.

**AERIAL APPLICATIONS**

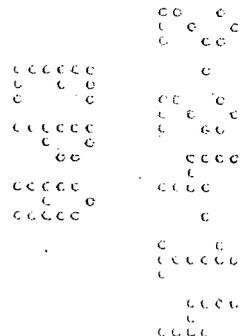
All restrictions must be taken to minimize or eliminate spray drift. Both helicopter and fixed wing aircraft can be used to apply this product, but applications to aquatic sites are restricted to helicopter only. DO NOT make applications by helicopter or fixed wing aircraft unless appropriate buffer zones can be maintained to prevent spray drift out of the target area, or when spray drift as a result of helicopter application can be tolerated.

Uniformly apply the specified amount of this product in 2 to 30 gallons of water per acre. A foam reducing agent may be added at the specified label rate.

Immediately after each use of this product thoroughly clean application equipment, including landing gear. Uncoated steel surfaces (except stainless steel surfaces) may result in corrosion and failure after prolonged exposure to the product. The maintenance of an paint (organic coating) may prevent corrosion.

**Aerial Applications Restrictions:**

1. Applicators are required to use a Coarse or Coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer



nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet; Applicators are required to use a Very Coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet; Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.

2. Applicators are required to use upwind swath displacement.
3. The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
4. Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
5. Applications into temperature inversions are prohibited.
6. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a Microfoil boom, Thru-Valve boom or raindrop nozzles, must be used and calibrated. Except when applying with a Microfoil boom, a drift control agent may be added at the label rate.

**GROUND APPLICATION (BROADCAST)**

**FOLIAR APPLICATIONS**

**Low Volume Foliar:**

Use equipment calibrated to deliver 5 to 20 gallons of spray solution per acre. To prepare the spray solution, thoroughly mix in water 0.5 to 5% of this product plus surfactant (see the ADJUVANTS section of this label for specific recommendations). A foam reducing agent may be applied at the label rate, if needed. For control of difficult species (see AQUATIC WEEDS CONTROLLED section and the TERRESTRIAL WEEDS CONTROLLED section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes but DO NOT apply more than 1.5 pounds acid equivalent Imazapyr (equivalent to 6 pints) per acre per year. Excessive wetting of foliage is not recommended. See the MIXING GUIDE below for some suggested volumes of this product and water.

For low volume, select proper nozzles to avoid over-application. Proper application is critical to ensure desirable results. Best results are achieved when the spray covers the crown and approximately 70% of the plant. The use of an even flat fan tip with a spray angle of 40 degrees or less will aid in proper deposition.

Recommended tip sizes include 4004E, or 1504E. For a straight stream and cone pattern, adjustable cone nozzles such as 5500 X3 or 5500 X4 may be used. Attaching a rollover valve onto a Spraying Systems Model 30 gunjet or other similar spray guns allows for the use of both a flat fan and cone tips on the same gun.

Moisten, but DO NOT drench target vegetation causing spray solution to run off.

**Low Volume Foliar with Backpacks:**

For low-growing species, spray down on the crown, covering crown and penetrating approximately 70% of the plant.

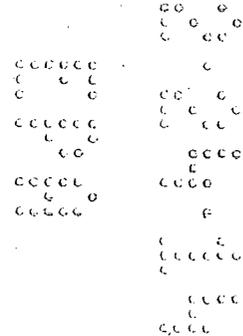
For target species 4 to 8 feet tall, swipe the sides of target vegetation by directing spray to at least two sides of the plant in smooth vertical motions from the crown to the bottom. Make sure to cover the crown whenever possible.

For target species over 8 feet tall, lace sides of the target vegetation by directing spray to at least two sides of the target in smooth zigzag motions from crown to bottom.

**Low Volume Foliar with Hydraulic Handgun Application Equipment:**

Use same technique as described above for Low Volume Foliar with Backpacks.

For broadcast applications, simulate a gentle rain near the top of target vegetation, allowing spray to contact the crown and penetrate the target foliage without falling to the understory. Herbicide spray solution which contacts the understory may result in severe injury or death of plants in the understory.



SPRAY SOLUTION MIXING GUIDE FOR LOW-VOLUME FOLIAR APPLICATIONS

AMOUNT OF SPRAY SOLUTION BEING PREPARED	DESIRED CONCENTRATION (fluid volume)				
	0.5%	0.75%	1%	1.5%	5%
(amount of product to use)					
1 gallon	0.6 fl. oz.	0.9 fl. oz.	1.3 fl. oz.	1.9 fl. oz.	6.5 fl. oz.
3 gallons	1.9 fl. oz.	2.8 fl. oz.	3.8 fl. oz.	5.8 fl. oz.	1.2 pint
4 gallons	2.5 fl. oz.	3.8 fl. oz.	5.1 fl. oz.	7.7 fl. oz.	1.6 pint
5 gallons	3.2 fl. oz.	4.8 fl. oz.	6.5 fl. oz.	9.6 fl. oz.	2 pints
50 gallons	2 pints	3 pints	4 pints	6 pints	10 quarts
100 gallons	4 pints	6 pints	8 pints	6 quarts	5 gallons

2 Tablespoons = 1 fluid ounce

High Volume Foliar:

For optimum performance when spraying medium to high-density vegetation and brush, use equipment calibrated to deliver up to 100 gallons of spray solution per acre (GPA). Spray solutions exceeding 100 GPA may result in excessive spray run-off, causing increased ground cover injury, and injury to desirable species. To prepare the spray solution, thoroughly mix this product in water and add a surfactant (see ADJUVANT section for specific recommendations and rates of surfactants). A foam-reducing agent may be added at the label rate, if needed. For control of difficult species (see AQUATIC WEEDS CONTROLLED section and the ADDITIONAL WEEDS CONTROLLED section for relative susceptibility of weed species), use the higher concentrations of herbicide and/or spray volumes, but DO NOT apply more 1.5 pounds acid equivalent Imazapyr (equivalent to 6 pints) per acre per year in aquatic and non-cropland sites and 0.75 pounds acid equivalent Imazapyr (equivalent to 3 pints) per acre per year in pasture and rangeland sites. Uniformly cover the foliage of the vegetation to be controlled but DO NOT apply to run-off. Excessive wetting of foliage is not recommended.

Side Trimming:

DO NOT side trim with this product unless severe injury or death of the treated tree can be tolerated. This product is readily translocated and can result in death of the entire tree.

Ground Boom Applications Restrictions:

1. Applicators are required to use a nozzle height below 4 feet above the plant canopy or the ground and coarse or Coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
2. Applications with wind speeds greater than 10 mph are prohibited.
3. Applications into temperature inversions are prohibited.

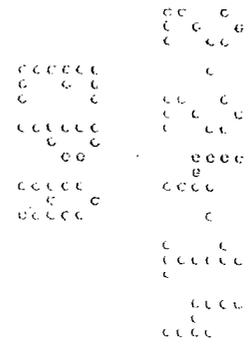
CUT SURFACE TREATMENTS

This product may be used to control undesirable woody vegetation by applying the product solution to the cambium area of freshly cut stump surfaces or to fresh cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. DO NOT over apply solution causing run-off from the cut surface.

Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

Mixing: This product may be mixed as either a concentrated or dilute solution for stump and cut stem treatments. The dilute solution may be used for applications to the surface of the stump or to cuts on the stem of the target woody vegetation. Concentrated solutions may be used for applications to cuts on the stem. Use of the concentrated solution permits application to fewer cuts on the stem, especially for large diameter trees. Follow the application instructions to determine proper application techniques for each type of solution.

- To prepare a dilute solution, mix 8 to 12 fluid ounces of this product with one gallon of water. If temperatures are such that freezing of the spray mixture may occur, antifreeze (ethylene glycol) may be used according to manufacturer's label to prevent freezing. The use of a surfactant or penetrating agent may improve uptake through partially callused cambiums.
- To prepare a concentrated solution, mix 2 quarts of this product with no more than 1 quart of water.













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- Control of undesirable vegetation for wildlife habitat improvement.
- Control of undesirable vegetation to aid in the establishment of desirable rangeland plant species.
- Release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species.
- Control of undesirable vegetation to aid in the establishment of undesirable vegetation following a fire.
- Control of undesirable vegetation to reduce wildfire fuel.

To ensure the protection of threatened and endangered plants, when applying this product to rangeland:

- Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
- Other organizations or individuals must operate under a habitat conservation plan if threatened or endangered plants are known to be present on the land to be treated.
- State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.

See appropriate sections of this label for specific use directions for the desired rangeland vegetation management control desired.

This product must only be applied to a given rangeland acre as specific weed problems arise. Long-term control of undesirable weeds ultimately depends on the successful use of the land management practices that promote the sustainability and growth of desirable rangeland plant species.

#### ROTATIONAL CROP GUIDELINE

Rotational crops may be planted 12 months after applying this product at the specified pasture and rangeland rate. Twelve months after an application of this product, and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture and rangeland once grown to maturity. The test strip should include low areas and knolls, and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of this product in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various agronomic factors and environmental factors make it impossible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

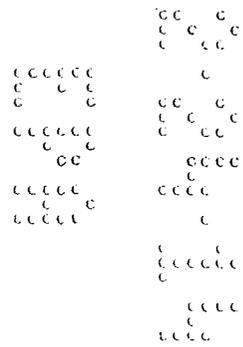
#### TERRESTRIAL WEEDS CONTROLLED

In terrestrial sites, this product will provide preemergence or post-emergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of this product. For established biennials and perennials postemergence applications of this product are recommended.

The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low volume spray solutions (see "Low Volume" section of "Ground Applications"); low volume applications may provide control of the target species with less product per acre than is shown for the broadcast treatments. This product must be used only in accordance with the Directions for Use on this label.

The relative sensitivity of the species listed below can also be used to determine the relative risk of causing non-target plant injury if any of the below listed species are considered to be desirable within the area to be treated.

**Resistant Biotypes:** Naturally occurring biotypes (a plant within a given species that has a slightly different, but distinct genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled. If naturally occurring resistant biotypes are present in an area, this product should be tank-mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.











TERRESTRIAL WEEDS CONTROLLED (continued)		
COMMON NAME	SCIENTIFIC NAME	GROWTH HABIT <sup>2</sup>
BRUSH SPECIES (continued)		
Apply 4 to 6 pints per acre <sup>1</sup> (continued)		
Eucalyptus	<i>Eucalyptus</i> spp.	P
Hawthorn	<i>Crataegus</i> spp.	P
Hickory <sup>3</sup>	<i>Carya</i> spp.	P
Huckleberry	<i>Gaylussacia</i> spp.	P
Lyonia spp. Including: Fetterbush Slaggerbush	<i>Lyonia lucida</i> <i>Lyonia mariana</i>	P P
Madrone	<i>Arbutus menziesii</i>	P
Maple	<i>Acer</i> spp.	P
Melaleuca	<i>Melaleuca quinquenervia</i>	P
Mulberry <sup>3,6</sup>	<i>Morus</i> spp.	P
Oak <sup>7</sup>	<i>Quercus</i> spp.	P
Persimmon <sup>4</sup>	<i>Diospyros virginiana</i>	P
Poison oak	<i>Rhus diversiloba</i>	P
Poplar	<i>Populus</i> spp.	P
Privet	<i>Ligustrum vulgare</i>	P
Red alder	<i>Alnus rubra</i>	P
Red maple	<i>Acer rubrum</i>	P
Saltcedar	<i>Tamarix pentandra</i>	P
Sassafras	<i>Sassafras albidum</i>	P
Sourwood <sup>4</sup>	<i>Oxydendrum arboreum</i>	P
Sweetgum	<i>Liquidambar styraciflua</i>	P
Sycamore	<i>Platanus occidentalis</i>	P
Tanoak <sup>3</sup>	<i>Lithocarpus densiflorus</i>	P
Titi <sup>8</sup>	<i>Cyrilla racemiflora</i>	P
Tree of heaven	<i>Ailanthus altissima</i>	P
Vaccinium spp. Including: Blueberry Sparkleberry	<i>Vaccinium</i> spp. <i>Vaccinium arboreum</i>	P P
Water willow <sup>9</sup>	<i>Justicia americana</i>	P
Yellow poplar <sup>3</sup>	<i>Liriodendron tulipifera</i>	P

<sup>1</sup> Use higher labeled rate where heavy or well-established infestations occur.  
<sup>2</sup> Growth Habit: A = Annual, B = Biennial, P = Perennial  
<sup>3</sup> Use higher labeled rate  
<sup>4</sup> Best control with applications before formation of fall leaf color.  
<sup>5</sup> Tank mix with glyphosate.  
<sup>6</sup> Degree of control may be species dependent  
<sup>7</sup> For water oak (*Quercus nigra*) laurel oak (*Quercus laurifolia*) willow oak (*Quercus phellos*) and live oak (*Quercus virginiana*) use higher labeled rates.  
<sup>8</sup> Suppression only.  
<sup>9</sup> Use not permitted in California unless otherwise directed by supplemental labeling.

